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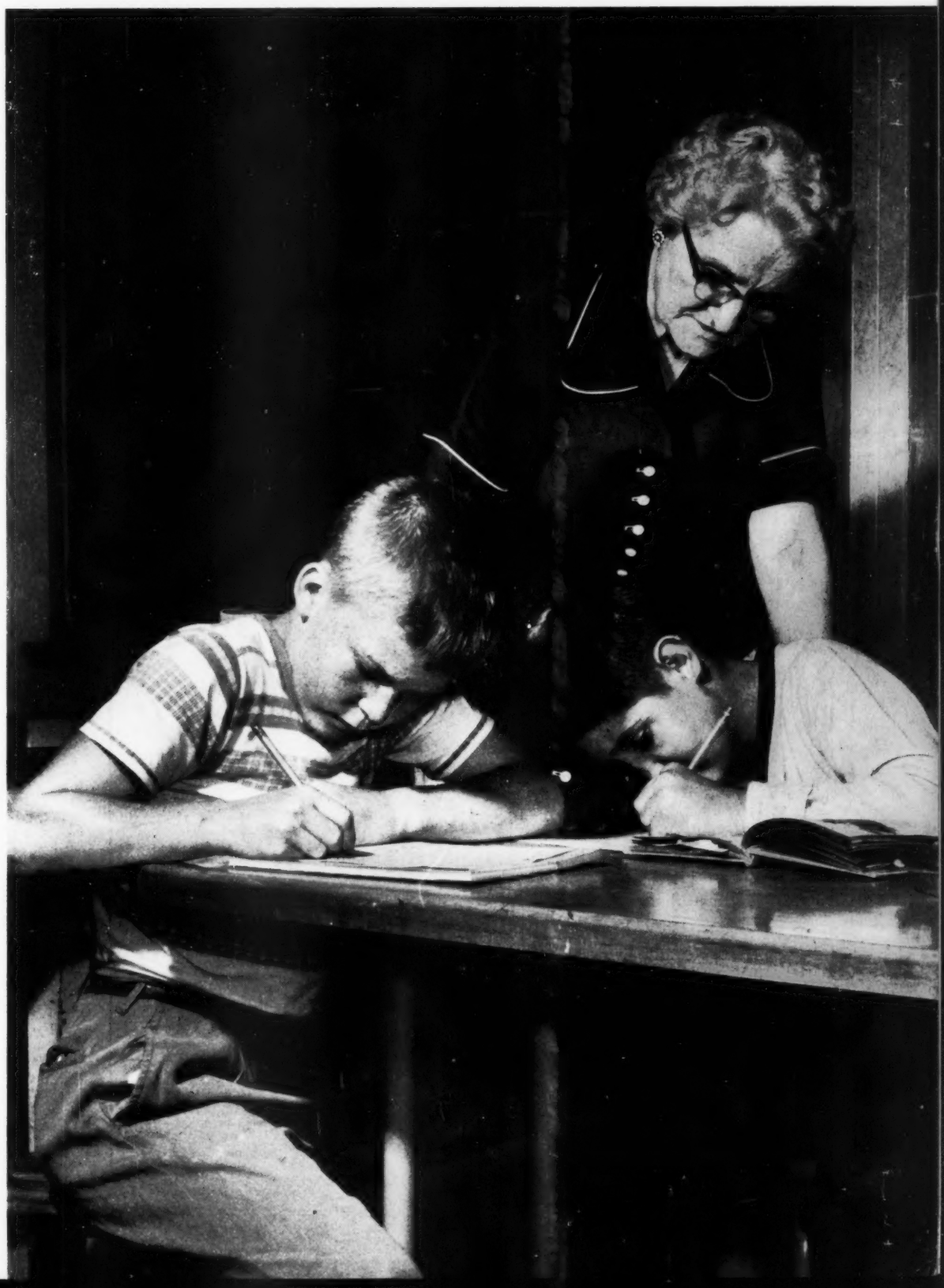

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The Training School BULLETIN

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1. Articles of a technical nature, e. g., reports of research, discussion of problems in the field.
2. Non-technical articles of general interest, e. g., human interest stories of the mentally retarded, restatements of technical material for the layman.
3. Book reviews and news notes.
4. In special instances republication of important articles having limited distribution.

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The Old Order Changeth

This issue of The Training School Bulletin brings with it a change of format and institutes quarterly publication. Material published in the new Bulletin will consist mainly of information for the practising professional worker. The Editorial Committee hopes that it can meet present and future needs more fully in this form. News notes concerning events at The Training School will appear in "The Reporter", a separate publication.

On this page we will indulge ourselves in what might be called editorial comment. There is a steady march of events and problems that parade before all of us who seek to help the mentally retarded which impels one to comment on them, and the informal atmosphere of this page will lend itself to the expression of thoughts and ideas on many things which concern the professional worker.

Time brings with it pressures for adapting to new conditions which cannot be disregarded. Many discussions among staff members of the Editorial Committee over the years have preceded this change. Finally, in the opinion of the group, the moment had come. Sober thought followed by deliberate action on the part of a group of workers concerned with any problem are among the best guarantees for the success of any venture and we trust the passing years will substantiate the Committee's judgment.

Institutions deal with people and, perforce, their staffs cannot allow themselves to become too removed or too impersonal. At best a family relationship grows up between the staff and those for whom they labor. Decisions cannot be carved boldly from situations by dramatic decisions but have to be worked out slowly with the help of all those who have a part in the particular problem at hand. Committees may turn out to be favorite playgrounds for procrastination but good committees produce more rounded judgments and tend to balance more extreme thinking by a few members. As such the individual whose life may be at stake probably benefits more in spite of possible inefficiencies of the system.

And so, whether an individual's future is decided or a publication's, a plan is spawned and the results will bear witness to the sageness of its progenitors.

Factor Identification

Advances in research and in methods of treatment and training in this field are hampered by the fact that mental retardation is a symptom-complex rather than an entity. Many studies consciously or unconsciously refer to the condition as if it were like measles or diphtheria. Because it is a symptom produced by a constellation of factors which undoubtedly vary within different persons, the elements which must be controlled in any study must be clarified and the one to be used experimentally must be identified. But the factors involved are not clearly known and their selection is difficult. The amount and degree of variation of a factor noticed in the study of different individuals are important as are the effect of factors upon each other when in combination and on any one selected for investigation.

There is great need for studies to isolate these factors and experiments to demonstrate their importance in methodology. One such attacks the problem psychologically. Under the title of "Alibity Structure in the Mentally Retarded", this five year study at a cost of $139,117 to be supported by funds from U. S. Public Health Services, has begun at The Training School laboratory. Studies done in centers everywhere are needed to expose factors in other fields. Psychological factors alone cannot account for the particular condition of mental retardation in any one child. Factors which can be revealed by workers in other fields can well have influence on the particular constellation being examined.

This is the age of specialization and in the realization of what this portends it would be difficult to imagine any professional group which did not appreciate the short-comings this produces in each field and which did not recognize the great need for inter-disciplinary coordination in order to accomplish results effective for a "whole" person or for a "total" problem. Even problems of limited scope frequently fall beyond the scope of any single field of interest. Certainly the factors which group together to produce mental retardation in a child span many fields, and their coordinating interplay or lack of it in the constellation represented in any child forms the basis in itself for much study and experimentation.

Walter Jacob

NOV 18 1960

Classification and Research in Mental Deficiency

By MORTIMER GARRISON, JR., Ph.D.

Everyone has attempted to classify things into some useful fashion at one time or another. This is the first step towards bringing order out of what may otherwise appear confusion. Through observation of similarities and differences it becomes possible to group. The groupings may indicate how many classes of objects exist or how many problems need to be investigated. Classification may be attempted for empirical purposes or on the basis of some theoretical rationale. Ultimately an attempt at classifying stands or falls on the extent to which it provides order, that is, allows greater predictability and control of the phenomena under consideration.

In work with mentally retarded children many types of classification have been proposed and applied. This term may be restricted to the attempt to determine whether a child properly fits a specific setting. It may be more broadly applied as in the attempt to "classify" children on the basis of the presumed etiology of their condition. Finally, and obviously, to assert that a child is mentally retarded, is to classify him.

It may be that in effort to fit individuals into a cottage so as to provide a group who are similar with respects to age, sex, I.Q., and personality, one individual simply will not fit. The question then arises where does he fit. This same process has repeatedly occurred in the effort to establish homogeneous groups for research.

A cottage classification such as described above might be considered administrative. Grouping individuals by IQ has been considered a metrical classification. Other attempts have involved the nature of the pathology, if known, psychiatric condition, and response to various behavioral measures (e. g., those who lack eye-hand coordination.) Each of these has its value and tends to add to knowledge. No single basis has been found to be completely satisfactory. There are always those who simply will not fit. This undoubtedly only reflects the complexity of the underlying problems and the degree to which the organism acts as a whole. Depending upon psychiatric condition, a classification or the basis of IQ may or may not be meaningful. These factors interact and our attempts to simplify may lead us to an essentially useless over-simplification. Ideally, we should be able to evaluate all of these factors so as to come out with a diagnostic statement implying knowledge of the etiology, the treatment, and the prognosis. As yet the majority of cases labeled mentally retarded do not fit neatly into this format.

The method of classification proposed by Tredgold provided the form against which others may be compared. He distinguished between both forms and degrees of defect. By etiology he distinguished two forms, primary and secondary. Those suffering from primary mental defects were characterized by a defect which is "germinal, intrinsic or endogenous".[1] Those classified as suffering from secondary mental defects were characterized as extrinsic or exogenous. He also endeavored to distinguish adverse environmental factors depending upon whether they were effective before, during, or after the birth of the patient.

Having distinguished this general form he then discusses pathogenesis and finally clinical varieties. Under pathogenesis he described germinal traumatic, defective, degenerative, and deprivation types of mental deficiency. Under each of these is found the particular clinical variety which seems appropriate. Thus cretinism, cases of nutritional defect, and isolation are instances of deprivation which in turn is a pathogenetic class of secondary amentia.

Lewis[2] proposed categories of subcultural and pathological amentia. He made a theoretical distinction between variations from average due to normal and abnormal causes. The subcultural patient is thought to represent a physiological or normal variation from the average as opposed to a pathological or diseased condition. He felt that classifying the

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1. Tredgold, A. F. — A textbook of mental deficiency (7th ED.) Baltimore, Williams and Wilkins, 1947.

2. Lewis, E. D. — Types of mental deficiency and their social significance. Journal of Ment. Sci. 1933, 79, 298-304.

subcultural defective with other forms of primary amentia did not emphasize the extent to which the subcultural group represented a pressing social problem requiring different remedial measures from those applicable to the pathological type. He, himself, said that his dichotomy did not add to our knowledge of the etiology of mental deficiency or sharpen available diagnostic procedures, but it was intended to present forceably the importance of the problem presented by the subcultural defective to society.

Sarason[3] whose discussion of Lewis has been followed above notes that Lewis' dichotomy is descriptive rather than etiological. He also notes that the use of the label **subcultural** is far from clear and that research is badly needed on the relationship between cultural conditions and intellectual functioning. This observation is adequately underlined by the present situation in which the "subcultural" may not actually be labeled. In times of high employment it would appear that he may successfully hold a job and rear a family. Although to some extent this may be a marginal adjustment it emphasizes a problem not considered in this paper directly, diagnosis.

Strauss[4] and his colleagues have emphasized the endogenous-exogenous typology. The exogenous individual is defined as a brain-injured child who before, during, or after birth has received an injury to or suffered an infection of the brain. Of particular interest is the statement that such a child may show disturbances in perception, thinking, and emotional behavior with defects of the neuromotor system present or absent. This emphasis on behavior should not be over-looked. Classification is based on both the history and neurological and psychological examinations which may reveal a "syndrome of exogeneity" though the history may be negative for brain injury. The endogenous type is synonymous with Tredgold's primary amentia.

This method of classification begins to face squarely the many cases which are frequently labeled "undifferentiated". The classification system now used at The Training School also endeavors to do this.[5] Classification becomes a probability statement depending upon the number of items from the history and examinations which point in the same direction. This system represents the assets and difficulties of most efforts to classify the mentally retarded. Its categories are familial, organic, mixed, unexplained, mongoloid, and not-classifiable. These categories illustrate the difficulty of obtaining adequate and accurate information. In an instance where there is a full and complete case history and complete examinations which are not revealing one is inclined to conclude that the individual may best be classified as unexplained.

Usually the differential diagnosis between emotional disturbance and brain injury is not simply that of ruling out one condition or the other, but of endeavoring to estimate their relative importance. This illustrates the difficulties involved in endeavoring to categorize.

The same problem is reflected in the statistics reported according to the code adopted by the National Committee on Mental Hygiene. This coding contains some 16 categories including undifferentiated, familial, mongoloid and a variety of organic conditions or concomitant. Does one report a case as "trauma at birth" or "due to epilepsy" where both retardation and seizures are present?

Kugelmass[6] presents a classification which has its merits. He states that his own book includes "a large number of heterogenous disorders related only by the common denominator of incomplete or inadequate mental development". He hopes to produce "rational groupings of related signs and symptoms (which) will reduce the unwieldy mass of descriptive data to some serviceable system in everyday pediatrics practice." He divides the amentias into four clinical groups; developmental, metabolic, neuromotor, and psychological. In the first category he cites: developmental defects, skull deformities, facial deviations and body dwarfism. The metabolic group includes: endocrine disorders, reticuloendothelial, and skin disorders. The neuromuscular group includes: convulsive disorders, involuntary movements, and motor paralysis. The final category, psychological, includes: behavior disorder, sensory defects, and psychic defects. He endeavors to present a system of

3. Sarason, S. B. — Psychological problems in mental deficiency, Harper, New York, 1949.
4. Strauss, A. A. and Kephart, N. C. — Psychopathology and education of the brain-injured child, Grune & Stratton, New York, 1955.
5. Riggs, M. M. and Rain, M. E. — A classification system for the mentally retarded. The Training School Bulletin, 1952-3, 49, 75-84, 151-168.
6. Kugelmass, J. N. — The management of mental deficiency in children. New York, Grune & Stratton, 1954.

syndromes characterized by the present and observable characteristics or as he states, "a classification of mental defects based on overt clinical features rather than on elusive etiological supposition."

Ackerman and Menninger[7] describing procedures used at the Southard School present a classification relevant to their situation. They describe two groups; one is those who are labeled functionally retarded containing a subgroup with minor structural defects and a second subgroup without structural defect. Their second group consists of those showing retardation with structural defect. In this group they utilize the distinction of primary and secondary in pathogenesis and beyond this list 12 clinical types. They note that this is a pragmatic grouping and that the first, but smallest group, is composed of forms which, hypothetically, are much more favorably amenable to treatment.

From this review of systems of classification one may first ask whether attempting to define a field of mental deficiency is not in itself a step which may now be reviewed as too artificial and arbitrary. Mental deficiency is itself a symptom which may be associated with a wide variety of underlying conditions. Attempts to define mental deficiency as a condition have inevitably involved some statement about age of onset such as at or shortly after birth; thus the distinction between aments and dements. Perhaps the situation would be clearer if instead of a diagnosis of mental deficiency, mild, moderate or severe; the diagnosis was chronic brain syndrome or metabolic disturbance with some specified behavioral pathology. Surely, there are implications for research if such a distinction could be made. Frequently an "organic" group will involve individuals who have been damaged before, during, or after birth. Trauma after birth may mean encephalitis at the age of 5. With the present emphasis on the importance of experience in the earliest years in determining the course of development it would appear reasonable to expect results which are far from clear when groups are compared experimentally who have such inherent variability built in. For this reason, for research purposes, we are attracted to the idea of utilizing a classification based on present observable behavioral factors. This is not to deny the importance of material from the individual's history, but if this material is really relevant it should be possible to demonstrate this in the present measurable functioning of the individual. The difficulty is that there are many events which are from time to time associated with mental retardation but these may not of themselves be a sufficient condition to result in this symptom. Until we have much more substantial knowledge as to the necessary conditions for intelligent behavior it is difficult if not impossible to determine the importance of historical information in any given individual and thus self-defeating to use this material as a basis for defining groups for experimental purposes.

The importance of the integrity of the organism is accepted but the relative importance of organ systems has been under investigation for many years. Innumerable studies of ablation and stimulation in man and animal, studies of metabolism, of reactions to stress all have essentially to do with this complex problem. Those classified as mentally retarded represent only one group in whom for some reason this relation between acceptable, effective, productive behavior and the integrity of the organism is disturbed. In no sense is there a special field of mental retardation presenting special problems separate from those elsewhere under investigation although there may be a difference in the labels applied. A separate classification of mental deficiency may have produced such a pattern of thinking about treatment and research so as to divorce such efforts from the major body of scientific work of which they are a part.

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Analysis of Speech Defects Among The Institutional Mentally Retarded

BERNARD B. SCHLANGER, Ph.D.
ROBERT H. GOTTSLEBEN, M.S.

The mentally retarded may range in functional level from the helplessly dependent, completely lacking in all means of expressive communication, to the moron and borderline cases, with no speech defects. Aberrant speech in itself may be a symptom of the same underlying etiology causing the mental deficiency. On the other hand, the deviated speech may stem from factors wholly unrelated to those resulting in the symptoms of retardation. Defective speech may even augment the mental retardation by adding communication and emotional problems to an already handicapped existence. As mental retardation is not an entity, but results from a constellation of many factors, it would seem to be superficial to diagnose a speech defect or delayed speech as caused by mental retardation. For example, a child with congenital cerebral mal-development may have as sequelae all, or any combination, of the following: a crippled condition, intellectual deficit, symbolic disorders, and dysarthric speech. Mental retardation in such a child could hardly be designated as the cause of the speech disorder.

Mental retardation and speech defects often occur in concert. Previous surveys of speech defectiveness among retarded children indicated that 55 to 66 per cent had speech deviations (5). Detailed information on speech symptoms has been presented by Kennedy (3) and Schlanger (4). The incidence of speech problems in the various etiological groups subsumed under the broad heading of mental retardation has not been previously noted. In order to investigate this as well as to indicate the manifold speech problems in an institutionalized retarded population, a study was made of the incidence of speech defects in the total population and in clinical types of mental deficiency among the residents of The Training School.

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Subjects and Procedure

The speech of the entire population of 516 residents at The Training School was analyzed. There were 377 males and 139 females. Their C.A. mean was 28.9 years; the S.D. was 17.3. The M.A. mean was 7.8 years; the S.D. was 3.0.

Certain limitations on the population were present. It did not represent all etiological groups or the hypothecated proportions of these groups among the retarded. Further, the admission requirements of The Training School were, in themselves, limitations.

Speech diagnoses given yearly over a period of five years by the authors formed the basis of the speech evaluations. Both had given diagnostic examinations to and prepared reports on every resident of The Training School at least once and in most cases, several times. In addition, over 125 of the children were seen in regularly scheduled individual or group therapy. Furthermore, most of the residents were seen frequently in informal situations.

Descriptive ratings were made for deviations of articulation, voice characteristics, and rhythm. The diagnostic examination indicated whether the articulatory problem was entirely, or in part, dysarthric (motor difficulty due to CNS impairment) or dyslalic. Articulation was also rated numerically on five levels. Articulation within normal limits was given a rating of **five;** intelligible articulation with slight defects which did not affect oral communication was indicated by a **four; three** showed that speech was intelligible but that frequent errors obscured the meaning; **two** designated speech that was intelligible only if the response was anticipated, and **one** signified that speech was unintelligible with most sounds severely defective or that the subject was mute.

Voice deviations were given broad descriptive designations. No ratings were attempted on vocal characteristics. Descriptive terms were also applied to stuttering patterns: clonic, tonic, and secondary reactions.

All descriptions and levels of speech defects of each subject were mutually decided by the authors. Since both have had five years of

clinical speech experience with retarded children as well as additional years with normal children, the reliability of the two examiners was considered adequate. Previous studies have indicated a high degree of reliability among judges who are trained and experienced (1), (2).

The clinical classification of the residents of The Training School follows the National Committee for Mental Hygiene list (7) as required by the New Jersey Department of Institutions and Agencies and the United States Census Bureau. The code numbers and the etiological classifications of mental retardation are as follows:

0. Undifferentiated
1. Familial
2. Mongolism
3. With developmental cranial anomaly
4. With congenital cerebral spastic infantile paraplegia
5. Due to infection
6. Due to trauma during birth
7. Due to trauma after birth
8. Due to epilepsy
9. With glandular disorder
10. With familial amaurosis
11. With tuberous sclerosis
12. With other organic nervous disease
13. Mixed
14. Other Forms
15. Not Mentally Retarded

The above classifications were modified as follows for the purposes of this study. Those whose etiologies indicated a central nervous system impairment were grouped under Organic (these included cases in classifications 3 through 12). The Undifferentiated category consisted of individuals who could not be placed under any of the above clinical types. They were not differentiated either by symptomatology, pathogeneses, or cause. The Other Forms group included cases sufficiently distinctive in symptomatology to be classified under some clinical entity other than those given above, such as mental retardation with psychosis, psychoneurosis, or psychopathic personality. Not Mentally Retarded included subjects admitted as mental retardates who upon later examination were found not to be retarded even though functioning on a subnormal level. Those whose classification had not been completed were included in the No Etiology group.

Results and Discussion

Varying types and levels of speech defectiveness were apparent in 408 (79%) of the 516 residents. This figure of 79% is much higher than previously reported in speech surveys of large groups of the retarded (5). The nature of the population at The Training School may partially explain this high figure. Various estimates have indicated that the Familial group comprises between one-third and one-half of all mentally retarded children. The Familial group at The Training School was only 12 per cent of the school population.

Table 1

Incidence and types of speech defects of The Training School population (N=516)

Defect	Total*	Total Per Cent
Total of all subjects with defects	408	79
Articulation	400	78
Dyslalic		
1	21	
2	40	
3	83	
4	196	
Dysarthria		
1	31	
2	50	
3	39	
4	55	
Normal (5)	116	22
Voice	240	47
hoarse-husky	60	
aspirate	22	
hypernasal	62	
hyponasal	14	
pitch	40	
sing-song	9	
monotone	15	
rate	73	
volume	33	
Stuttering	89	17
clonic	82	
tonic	51	
secondary reactions	24	

* Total defects exceed N as many subjects have multiple speech defects. The subgroup totals also exceed articulation, voice, and stuttering group totals. For example, many subjects are included under both dyslalia and dysarthria.

Another reason for the high incidence of defective speech might be a changing, more dynamic philosophy regarding present day habilitation. The policy of prolonged institutional residence in the case of those with higher potential is being replaced by a policy of community placement when expedient. As a consequence, the population trend in institutions is shifting toward a lower grade, multiple handicapped resident. Thus, speech defectiveness among institutionalized retardates can be expected to be more extensive in the future.

The incidence and types of speech defects are given in Table 1. A total of 400 subjects (78%) had articulatory errors ranging from slight inconsistent deviations to severe distortions, omissions, and substitutions. It is interesting to note that practically all the subjects with voice and stuttering defects had, in addition, some degree of articulatory impairment. Many whose speech was dysarthric also had dyslalic consonant errors. Good articulation was prevalent in only 116 subjects.

The high incidence of dyslalic errors can be explained in part by environmental influence, low standards of self-criticism, and poor listening habits. The large percentage of hearing loss usually found among retardates undoubtedly contributed to the poor articulation (6). Voice disorders were found in 240 subjects (47%).

Eighty-nine subjects (17%) stuttered. The pattern of stuttering ranged from mild to severe blocking, with 82 of the stutterers demonstrating clonic blocks. Secondary reactions were observed in 26% of the stutterers. Because of the non-competitive, permissive attitude at The Training School, it may be that many of the subjects had not developed overt means of avoiding stuttering. Low standards of self-criticism and lack of insight undoubtedly contributed to this comparatively low incidence of secondary reactions.

Table 2 indicates the incidence of speech defects among the clinical types of mental retardates at The Training School. The greatest incidence occurred in the Mongoloid group. Ninety-five per cent of the Mongoloids were defective in articulation, 72% had voice defects, and 45% stuttered. One was mute. Among the larger etiological groups at The Training School, the Organics were next in frequency of speech defectiveness. Articulation was deficient in 84% of this group, 56% had voice defects and 18% stuttered. Four were mute.

The Undifferentiated probably include many who have an undiagnosed central nervous system impairment. For example, there are many retardates with suspected congenital maldevelopment of the brain which neurological tests have not verified. Therefore, one

Table 2

Speech defects in clinical types of mental retardates.

	Etiological Classification	N	Articulation	%	Voice	%	Stutter	%	No Speech
0	Undifferentiated	137	110	80	62	45	18	13	—
1	Familial	64	42	66	14	22	6	10	—
2	Mongolism	44	42	95	32	72	20	45	1
3-12	Organic	189	159	84	106	56	35	18	4
13	Mixed (F-O)	18	17	94	6	33	2	11	—
14	Other Forms	20	16	80	9	45	3	15	—
15	Not Mentally Retarded	26	11	42	10	38	3	12	—
No etiology		18	3	17	1	6	2	11	—
Total		516	400	78	240	47	89	17	—

can see that the data for the Organic group may not be stable as many of the Undifferentiated would possibly classify as Organic if contemporary neurological techniques were more refined. This might explain why so many of the Undifferentiated group were classified as speech defective. Eighty per cent of this group had articulatory errors, 45% had voice defects, and 13% stuttered.

The least amount of defective speech in the four largest clinical groups was found in the Familial classification. This is to be expected because of a lesser degree of pathology underlying their retardation. Sixty-six per cent of the Familial group had articulatory errors, 22% had voice defects, and 10% stuttered..

The Mixed group contained 18 subjects with both familial and organic histories. Speech deviations were high: 94% had defective articulation, 33% had voice defects, and 11% stuttered. Though this group was small in number, one could postulate that the superimposition of one retarding factor upon another had augmented the number of speech problems.

The Other Forms group also contained a high percentage of speech defectives. Behavioral deviations in this group tended to affect speech production. Personality problems were also present in many of the subjects in other etiological groups.

There were 26 subjects classified as Not Mentally Retarded. However, handicaps in this group such as aphasia, sensory defects, behavioral disturbances, and other pathological factors were reflected in the high incidence of speech defects. Articulation was affected in 42%, 38% had defective voices, and 12% stuttered.

Conclusions

The incidence of speech defects among the retarded is relatively high. In many cases the severity of the problem is extreme, although speech may also be within normal limits. It is apparent that there is no speech syndrome peculiar to the retarded individual.

Worthwhile contributions can be made by speech experts to the development of interdisciplinary research in the field of mental retardation. With an understanding of the dynamics of mental retardation, the speech expert can improve or ameliorate one important area, communication. Speech therapy can aid in the general adaptation of the mentally retarded by making them more like other individuals. Habilitation of these multiple handicapped subjects suffers if the communication potential is not explored and attained.

Mental retardation is not an entity, but a symptom complex. As it is caused not only by pathology of the physical system, especially the central nervous system, but also by defects in the psychological and sociological spheres, one should not diagnose speech problems as being **caused** by mental retardation. An awareness of this by speech clinicians invites a more searching investigation into speech problems.

Summary

Frequent speech examinations over a period of several years were given to 516 mentally retarded residents of The Training School. The incidence of speech defects in the population was ascertained. Speech defects in the clinical subgroups of mental retardation were also noted. Seventy-nine per cent of the population demonstrated varying degrees of speech defectiveness in one or more speech areas. The Mongoloids and Organics were the most seriously handicapped groups in speech. The Familial group was least handicapped.

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Diagnosing Child Behavior . . . An Experimental Approach

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NORMA S. WOHL, M.D.

Diagnostic understanding of the behavior of children plays a critical role in our efforts to deal with childhood psychiatric difficulties. Adequate diagnosis is the foundation for effective and appropriate treatment. Early diagnosis is basic to preventive programs.

With respect to the treatment of children suffering from psychiatric problems, diagnosis provides information needed for (a) detection of a deviant behavioral condition, (b) specifying the nature of the condition (i. e., differential diagnosis), (c) assessing the severity of the condition, and (d) deciding as to the proper therapeutic approach. With respect to preventive activities, diagnosis plays the essential role of allowing for early detection of a possible psychiatric condition upon which to base the establishment of appropriate ameliorative steps.

This distinction between prevention and treatment is necessarily subject to qualifications. Concerning so-called "mentally retarded" or "mentally deficient" children, where some basic neurological malfunction is responsible for the behavioral deviance, diagnostic detection is followed by a program of life-long treatment designed to allow the child maximum opportunity to develop his potentials. Here prevention refers mainly to attempts to avoid painful difficulties which so often arise when a handicapped child is not provided with an environment appropriate to his capacities. When the behavioral difficulty involves "emotional disturbances," our task may often be that of finding and changing the experiential conditions responsible for or associated with the emotional problem. Frequently these aims of prevention and correction are jointly operative, for example, children whose handicap is generating adjustive emotional disturbances.

These considerations suggest one important criterion which must be applied to the evaluation of diagnostic techniques, namely, that they differentiate adequately between the "organic" and "functional" aspects of the behavior of disturbed children. At the present stage of our knowledge, we may roughly distinguish certain forms of behavioral deviance: (a) general and specific inabilities to perform adequately as the result of underlying neurologic-organic malfunction; (b) emotional immaturity and disturbances associated with the handicaps these inabilities impose upon the child's adjustive efforts; and (c) emotional immaturity and disturbances not accompanied by such neurologic-organic malfunctions.

Speaking before the Third Annual Psychiatric Institute of The N. J. Neuro Psychiatric Institute in 1955, Sally Provence, M.D., of the Yale Child Study Center, outlined the following conditions as possibly relevant to differential psychiatric problems in children: (a) normal equipment + good environment = no disease, (b) normal equipment + severe affect deprivation = autistic symptoms, (c) vulnerable equipment + good environment = special sensitivities, no psychosis, (d) vulnerable equipment + unfavorable environment = childhood psychosis with or without intellectual retardation, (e) damaged or defective equipment (infection, intoxication, structural defect, metabolic defect) + unfavorable environment = mental retardation, autistic symptoms, (f) deafness or blindness + unfavorable environment = mental retardation, autistic symptoms.

Analysis of this nature points up the problem of diagnosis in relation to treatment. In order to initiate psychotherapeutic treatment of an emotional disturbance, we must know something about its nature and severity. In addition, however, we must know about the child's capability to respond to psychotherapy. Where the child suffers from what some may term a "mental handicap" due to some neurologic malfunctioning, we usually face the problem of assessing the general and specific potentials of the child as one step toward planning a developmental program designed to enable him to function at his maximum effectiveness as a member of society. But any distinction between "organic" and "functional" difficulties, between "mental" and "emotional" problems, must be applied with caution.

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If some inability to adjust normally is present, due to neurologic impairment, is handicapping a child, he may very well develop increasingly serious emotional problems if he is required to adjust to environmental circumstances which impose demands beyond his capacity. Here the diagnostic problem is complicated by the fact that treatment of the emotional aspect may itself be facilitated or hindered by the selective inabilities in his non-emotional adjustive potentials. Our diagnostic information must help to indicate the specific modes of approach which can be expected to prove fruitful for reducing the emotional disturbance.

The concept of "emotional disturbance" or "behavior disorder" generally implies that the child gives evidence that his adjustive potential is adequate, but who has not, for various reasons, achieved this potential satisfactorily. But there are strong reasons for believing that some emotionally disturbed children have what are called "psychotic" predispositions of such nature that long-range treatment must include not only correction of existing difficulties, but planning for the prevention of subsequent stresses which the individual might not be able to handle. We should not prematurely rule out the possibility that there are qualitatively different kinds of emotional difficulties in children corresponding, roughly, to the contemporary psychiatric concepts (loose as they are) of "neurosis" and "psychosis."

It can be seen from this brief formulation that the need for adequate diagnostic tools is great indeed. Yet, for all of the pressing need, we are still faced with the task of developing better diagnostic methods for use with children.

Why have we not achieved satisfactory diagnostic methods for understanding the behavior of children? Certainly many attempts have been made. In our opinion, the difficulty can best be understood in terms of the special problems which arise when we attempt to study the behavior of children. These problems are especially pertinent to the use of standard psychological tests, such as intelligence and personality tests. It is generally recognized that two major factors interfere with effective utilization of most standard tests: (a) language factors, and (b) motivational factors.

It is recognized that children with psychiatric difficulties are usually handicapped in their language development. Thus, verbal test material and verbal test instructions introduce considerations, when studying such children, that seriously question the validity of the test results. Is the material meaningful to this child? Does he understand the test?

Even when these language limitations are met with some degree of success, such as in "performance tests," there are motivational aspects of the test situation which arises to plague the tester. Again and again we find those who work with children in test situations emphasizing the importance of "rapport." By this, quite often, is meant the degree to which the tester was able to establish a relationship with the child in which the child "appeared" to be motivated to perform well. But how do we know whether the rapport was adequate, whether the child was as strongly motivated as would be necessary for the specific testing situation? Little is gained by relying on the tester's subjective impressions. How comparable are these among different testers, or for the same tester working with different children? Yet, the validity of the test results hinges upon the motivational influences governing the child's performance.

Summing up, we see a genuine need for adequate diagnostic methods for studying children which can overcome the language and motivational limitations imposed by most standard psychological tests.

Let us make clear, before proceeding further, that we are not questioning the value of psychological tests per se. We are saying that when standard psychological tests are applied to children where language and motivational considerations may question the results obtained, or where violations of the standardized test administration conditions are introduced to attain some scoreable performance from the child, then the validity of the test results is seriously reduced.

This discussion has been prefatory to a presentation of an experimental approach to the diagnostic study of children which we believe deals effectively with these language and motivational problems. The authors have been engaged in exploratory investigations of a specific experimental situation in which the child being studied can obtain "rewards" by means of a simple motor response. Verbal variables are minimized or eliminated in that the

child can be studied without any verbal instructions. One or two demonstrations by the tester will usually suffice to initiate the performance. Motivational variables are dealt with directly by means of the fact that the child's test performance is one which produces immediate reward. The child can be allowed to indicate, verbally or otherwise, the reward which he prefers (e. g., candy, toys, beads, money, etc.). The effectiveness of the reward preferred can be evaluated empirically by the nature of the performance itself, thereby indicating whether it would be desirable to try other rewards which might be more effective.

Within this context — the child making a simple motor response which is occasionally rewarded with a preferred reward — the experimental test is one which establishes specific conditions which are known to produce, in "normal" children, a certain kind of learning performance. For example, a "piecework" condition can be introduced, in which the number of responses required to produce each reward is fixed. Under this condition, the typical child will show a progressively increasing response rate. If we increase the number of responses required, the rate increases appropriately. Or we may have a "time discrimination" condition, in which the rewards can be gotten only after a fixed time interval has passed. Here we find the typical child developing a rate much lower than that on piecework, and, if given adequate opportunity, the child shows a "time discrimination," with pausing at the start of the time period and responding at the end.

These experimental procedures (which have been termed "operant conditioning," "reward learning," or "work-for-reward" situations) have an honorable history. Mitrano, working at The Training School in the late 1930's, first demonstrated the applicability of these rewarded behavior procedures to studying behavior in children with "mental deficiency."

His subjects were male patients at The Training School, most of whom were about eight with "mental ages" ranging between 2-5 years. Using candy rewards for the response of inserting a chip in a slot, Mitrano was able to demonstrate learning, unlearning, and candy satiation. Unfortunately, no attempt was made to exploit this pioneering "beachhead" until almost two decades later, where we now find various researchers applying Mitrano's basic approach to the study of child behavior.

To the authors, the most important values of the method originally used by Mitrano can be listed as follows: (a) the techniques do not require verbal test material nor verbal test instructions; (b) the techniques allow for establishing adequate motivation in the child and for evaluating the adequacy of the motivation; (c) the measurements are truly objective and quantitative, which, combined with the experimental nature of the situation, allows for both clinical and non-clinical studies directly comparable in the meaning of the results obtained; (d) data have been obtained which show that the techniques will yield data from "normal" and "abnormal" children which can be used for diagnostic purposes; and (e) the flexibility of the techniques allows for systematic diagnosis of various aspects of the child's psychologic functioning, including psychomotor, sensory-perceptual, and other functions.

Let us cite certain prior studies by way of illustrating the kinds of results which have been obtained. First, with respect to children not designated as having any "mental" or "emotional" difficulties, several studies deserve attention. Bijou, a child psychologist at the University of Washington, has been studying "piecework," "time discrimination," and other reward "schedules" with pre-school and school age children. He finds that these different reward conditions produce characteristic performances (e. g., piecework producing high response rates, time discrimination producing lower rates, etc.). Maline, a psychology senior at Dartmouth College, has recently completed, in conjunction with Green, a Dartmouth psychologist, a study of children from the kindergarten, second, fifth, and tenth grades of the Hanover, New Hampshire school system. His procedure was a "time discrimination" one, with a 25-minute reward period followed by a 25-minute no reward period. During the 25-minute reward period, the child could obtain one reward each 30-seconds. His results show that (a) kindergarten children, as individuals showed wide variability (i. e., each child produced both very high and low rates), but as a group they were quite similar in that all behaved in this variable manner, whereas (b) tenth graders showed relatively consistent performances as individuals, but were widely different as a group. These data support the general notion that as the child develops, he acquires a reasonably

consistent personal mode of behavior. The experimental "personalities" of tenth graders were more individually consistent than those of kindergarteners, but showed much wider differences among individuals.

Azrin and Lindsley have reported a particularly interesting study in which jellybeans were used as rewards for conditioning cooperative behavior in teams of two-children each. The two children sat facing each other across a table, but separated by a transparent screen. Each child had a stylus which he could place in any one of three holes on the table before him. If the two children inserted their respective stylii in corresponding holes within a brief time of each other, a jellybean fell into a tray which both could reach. Cooperation was measured by the frequency with which the two children engaged in cooperative responding. All of the teams studies developed experimental cooperative behavior, working effectively together for jellybeans, but teams varied widely in the ease with which they learned to cooperate. Furthermore, interesting observations were made with respect to "dominance" and "submission" relations. If one child dominated in grabbing the jellybeans, the more submissive child typically learned to gain his share by refusing to cooperate unless the more dominant child gave up some of the jellybeans. This technique has obviously promise for studying various aspects of interpersonal relations among children (e. g., the readiness of a given child to learn to behave cooperatively), as well as for eventual application to psychotherapy (e. g., training children to become less dominant or less submissive in their social relations).

In our own exploratory work we have been able to train children to press a lever for candy, toys, pennies, and other rewards in an age range from two through sixteen. The "learning curves" have common features (e. g., a progressively increasing response rate), but younger children (pre-schoolers) show a tendency to be less able to maintain a stable performance without the rewards being changed periodically.

With regard to psychiatrically disturbed children, Lindsley has shown that in a specific "work-for-reward" situation with candy rewards for a knob-pulling response, psychotic children produce response rates lower than normal adults but higher than those of psychotic adults. Zeaman has been studying generalization of learning in "mentally retarded" children in a comparable learning situation.

Though we do not yet have sufficient data to support our belief that performances obtained under such experimental reward learning conditions will prove of diagnostic value, our preliminary data and that from other studies show that the techniques are applicable to children and that the performances are sensitive to psychiatric conditions, age, and other variables.

Our expectations are that under these experimental conditions, different kinds of performances will result which can be of value in diagnosing child behavior. Among the things to be included in assessments of the child's behavior are:

1. The rewards for which the child will work (e. g., younger children tend to select and work for more concrete rewards than older children).

2. The degree to which a given reward will build up and maintain a performance (e. g., younger children show a tendency to cease performing unless rewards are changed).

3. The degree to which the rate of response exhibited by the child is appropriate to the reward conditions (e. g., high rates for piecework, lower ones for time discrimination).

4. The appearance of unusual pauses or breaks in the performance (e. g., those reported in Lindsley's studies of psychotic adults and children).

5. The occurrence of high degrees of variability in response rates (e. g., the observation of more variable performances in kindergarten children).

6. The occurrence of undue stereotype or erraticity in response patterns.

7. The ability of the child to cease performing without undue emotional disturbance when the rewards are discontinued.

8. The retention of learning upon subsequent re-testing.

All of these performance features can be objectively and quantitatively described. Thus, we have a highly powerful and useful tool at our disposal for analyzing the behavioral status of children. Those studies which have been done demonstrate clearly the applicability of the method to children at different age levels and with different kinds of psychiatric disturbances.

Speaking before a meeting sponsored by the Philadelphia Association for Psychoanalysis in 1954, Anna Freud discussed various aspects of diagnosis with children. She said that the day may come when the emotional disturbances of school age children will be diagnosed by observing their behavior. This is not possible at present because there is not enough knowledge to make a correlation between patterns of behavior and diagnoses of definite emotional ills. But the knowledge is being accumulated, she said, and someday it should be possible to observe how a child behaves and translate this into a diagnosis of his emotional disturbance.

The authors hope that the day has come when Miss Freud's prophetic remarks can be realized. What is needed is systematic study of the performances of children such as those who are patients at The Training School. To achieve this, we plan an exploratory study for the summer of 1957 in cooperation with the Psychology Department at Vineland. Children selected to represent the rough categories "organic involvement, minimal emotional complications," "organic involvement, plus emotional complications," and "emotional difficulties without known organic involvement" would be studies under standardized experimental reward learning conditions. The results obtained should provide a straight-forward evaluation of the potential value of this approach to diagnosis. Realization of our high hopes would constitute a genuine forward step in progress toward more effective treatment and prevention of psychiatric disorders in children.

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